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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
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10/088,727

07/19/2002

Peter Knoll

10191/2289

4483

26646

7590

08/05/2004

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EXAMINER

SEVER, ANDREW T

ART UNIT

PAPER NUMBER

2851

DATE MAILED: 08/05/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                                      |                                     |  |
|------------------------------|--------------------------------------|-------------------------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/088,727 | <b>Applicant(s)</b><br>KNOLL ET AL. |  |
|                              | <b>Examiner</b><br>Andrew T Sever    | <b>Art Unit</b><br>2851             |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 1/13/2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 16-42 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 16-42 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 January 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Drawings*

1. The drawings were received on 1/13/2004. These drawings are acceptable.  
  
These drawing corrections overcome the objection to the drawings outlined in paragraph 2 of the non-final rejection mailed on 9/23/2003, however they do not overcome the objection outlined in paragraph 1 of the same rejection, which will be repeated here.
2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the generating a first image on a first surface and a second image on a second surface portion of the display surface must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

**Corrected drawing sheets are required in reply to the Office action to avoid abandonment of the application.** Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any

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required corrective action in the next Office action. **The objection to the drawings will not be held in abeyance.**

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 16-26 and 31-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jost et al. (US 4,919,517) and further in view of Kleinschmidt (US 6,750,832.)

Jost teaches in figure 1 a display apparatus in a vehicle, comprising:

A projection unit (5) arranged one of on a vehicle roof and on an inside mirror of the vehicle (Jost's projection unit is arranged on the vehicle roof in the position where an inside mirror would normally be placed); and

A display surface (11), which is outside the projection unit (arranged on an instrument panel adjacent to the windshield as claimed in applicant's claim 17, 34, and 37), onto which the projection unit generates an image.

Jost further teaches a reflective surface (windshield) arranged adjacent to the display surface onto which the light is deflected towards the viewer as is claimed by applicant's claims 19 and 20.

Jost teaches a virtual image is generated on the further reflective surface, however, Jost does not teach what kind of image is generated on the display surface (presumably, because Jost does not intend for the driver of the vehicle to look at the display surface, however it should be noted that it is well within the skill of one of ordinary skill in the art that the display surface taught by Jost can be used to generate a real image)

Kleinschmidt teaches in figure 23, a vehicle based projection system, which displays both a virtual and real image at the same time. The driver can view the image reflected off the windshield (as is done in Jost), which is virtual, or view the display surface directly (DIF), which is a real image. Kleinschmidt teaches in column 13 lines 5-12 that by displaying both, the driver can choose which he/she prefers, since as is well known to those of ordinary skill in the art at the time the invention was made, virtual and real images each have separate advantageous and in different driving conditions/environments one or the other is advantageous. Kleinschmidt differs from Jost in that it is a rear projection system rather than a front projection system, however Jost teaches in column 1 lines 52-59 that by using a front projector (which is well known in the art to be interchangeable with rear projectors) and mounting it on the ceiling, space in the vehicle can be better utilized.

Accordingly given the advantageous taught by Kleinschmidt of both displaying the real image on the display surface so that the driver can see it and the virtual image on a reflective surface (windshield), and the teaching of Jost of the advantages of using a front projector mounted on the roof of the vehicle and it being in the skill of one of ordinary skill in the art to combine the teachings of Jost and Kleinschmidt, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Jost in view of Kleinschmidt so that a real image was generated on the display surface by the projection unit in such a manner as a user (driver) could see a real image generated on the display surface as well as the virtual image on the windshield.

*With regards to applicant's claims 21, 22, 35, 38, and 39:*

Jost teaches in figure 3 that the display surface (where the real image is formed in view of Kleinschmidt) comprise of a structural pattern which is specified (in column 2 line 60 and claimed in claim 5) to be a Fresnel mirror, which those with ordinary skill in the art would recognize as a roughening of the display surface as is claimed in applicant's claims 18 and 21. Alternatively it can be constructed of a holographic optical element (as taught in column 3 lines 63-67 and claim 4) as is claimed in applicant's claims 22 and 39. All patterns both the Fresnel and holographic surfaces are well known for use in producing real images (Kleinschmidt alternatively teaches a Fresnel lens, since Kleinschmidt teaches a rear projection system for forming the real image.)

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*With regards to applicant's claims 23, and 40:*

As shown in figure 3 of Jost, the Fresnel mirror pattern is roughly a saw tooth structure in a 2 dimensional cut-out.

*With regards to applicant's claims 24 and 42:*

As shown in figure 24 of Kleinschmidt the real image display surface is of semi-spherical configuration (it is curved.)

*With regards to applicant's claims 25, 26, and 33:*

It is well known in the video arts to use one image source to display/project two images; specifically the video processing hardware takes two images and displays the first image in one portion of the display surface and a second image in a second surface portion of the display surface is done with picture in picture. (See for example US patent 5,280,540 to Addeo et al. and US 5,309,238 to Bae.) Since LCD projectors (which Jost teaches it can be in column 2 line 6 and as claimed in applicant's claim 33), which are a type of video projector as is claimed by applicant's claim 26, commonly are used to project TV type images and are well known to include video processing processors that have the capabilities of TV's, it would be obvious for one of ordinary skill in the art to have designed Jost in view of Kleinschmidt's projector to have picture in picture capability as well, so that the driver can watch his speed while reading a map for example. (It should be noted that Kleinschmidt even suggests this capability in column 15.)

*With regards to applicant's claim 31:*

Kleinschmidt teaches in column 15 lines 7-14 that the display on the windshield can be darkened, so only the real image/ display can be seen.

*With regards to applicant's claim 32:*

It is obvious that a Fresnel mirror or holographic mirror scatters light as taught by Jost in view of Kleinschmidt.

*With regards to applicant's claim 36:*

Kleinschmidt teaches that the light from the display apparatus is directed towards the viewer.

*With regards to applicant's claim 41:*

As shown in figure 1 of Jost the path of light from the projection unit to the display surface is at least approximately parallel to the windshield of the vehicle.



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5. Claims 27-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jost in view of Kleinschmidt as applied to claims 24-26 above and further in view of Hwang et al. (US 6,317,170.)

As described in more detail above, Jost in view of Kleinschmidt teaches a display apparatus in a vehicle comprising of a projection unit arranged on a vehicle roof for generating a real image on a display surface positioned adjacent to the windshield, which then reflects the image off the windshield and towards the direction of a viewer. Jost in view of Kleinschmidt further teaches that the surface of the display apparatus has a structural pattern, which comprises of a Fresnel structure. Jost in view of Kleinschmidt further teaches splitting the image into two images and dividing the display surface into two areas and projecting two separate images in those areas. Jost in view of Kleinschmidt teaches that the projector can be an LCD projector; Jost in view of Kleinschmidt does not necessarily teach that the projector is a laser type projector.

Hwang et al. teaches in figure 3 a laser projector, which comprises 3 light sources (150) of different colors (red, green, and blue) as is claimed in applicant's claim 29, which are combined and scanned by a means for scanning (900) and projected on a display surface (1000.) The light sources (150) comprise of laser diodes (see column 5 line 67), which is a laser beam generation unit as is claimed by applicant's claim 27. As shown in figure 1 and as is well known in the art, scanning means comprises of moving mirrors (80 and 70) as is claimed by applicant's claim 28.

Hwang teaches in column 1 lines 19-35 that the LCD type projector taught by Jost in view of Kleinschmidt has the limitation of requiring large amounts of power to

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generate a significantly bright image, Hwang further teaches that laser projectors overcome this in lines 36-48. Since presumably the projector of Jost in view of Kleinschmidt is to be operated in both nighttime and daytime conditions, the projector needs to be significantly bright for daytime operation. Since it is desirable to use as little power as possible in a vehicle (as this decreases fuel efficiency and automotive electrical systems have limited capacity as compared to a home or theater), it would be obvious to one of ordinary skill in the art at the time the invention was made to use a laser projector as taught by Hwang for the LCD type projector taught by Jost in Jost in view of Kleinschmidt's display apparatus in a vehicle.

With regards to applicant's claim 30, Jost in figure 1 shows that the display surface is approximately parallel to a windshield of the vehicle.

### ***Response to Arguments***

6. Applicant's arguments filed 1/13/2004 with respect to the first objection to the drawings (paragraph 1 of the non-final rejection mailed on 9/23/2003) have been fully considered but they are not persuasive.

Although applicant does explain in the specification what is claimed in claim 25; the explanation is not sufficient for one of ordinary skill in the art to make or use the invention. The addition of a drawing showing the claimed images generated are required for one to understand how the apparatus is to be designed. For example are the two images simply a result of digital manipulation or rather are they a result of a physical

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characteristic of the display surface? Further applicant's specification outlines many possibilities for obtaining the claimed subject matter; applicant should provide a preferred embodiment.

7. Applicant's arguments with respect to claims 1-42 have been considered but are moot in view of the new ground(s) of rejection.

In response to applicant's amendment the rejection has been changed to a 35 USC 103 rejection with a second reference providing a teaching of generating a real image on the display surface since Jost is ambiguous about whether the display surface produces a real image and clearly teaches that the reflective surface (windshield) produces a virtual image. Accordingly applicant's arguments are moot, however since Jost clearly did read on applicant's claims as originally filed and applicant's amendment necessitated the inclusion of Kleinschmidt the rejection is made final.

### *Conclusion*

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after

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the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

US 4,763,990 to Wood teaches in figure 2 a holographic system for a heads up display.

US 4,348,187 to Dotsko teaches for a simulator of an airplane in figure 1 generating an Aerial image (real image), however Dotsko does not teach where the display or the projector is.

US 2002/0171637 to Kadowaki et al. teaches in figure 28 a projector mounted on the roof of a vehicle, which produces an image on a display (11), which in paragraph 212 is taught to be a holographic display on which the projector generates real images. Kadowaki could be also used in a rejection of some of applicant's claims and may be used in a final rejection.

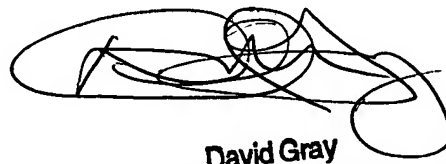
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew T Sever whose telephone number is 571-272-2128. The examiner can normally be reached on 8:30-5:00.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Judy Nguyen can be reached on 571-272-2258. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AS



David Gray  
Primary Examiner